

Code: AC55/AT55/AC105/AT105
Subject: OBJECT ORIENTED PROGRAMMING WITH C++

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours

JUNE 2016

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. _____ provide the means for describing a class generically and for instantiating classes that are type-specific versions of this generic class.
- (A) system template (B) class templates
(C) user template (D) function templates
- b. Any attempt to alter the value of a variable defined with _____ qualifier will prompt an error message from the compiler.
- (A) int. (B) char
(C) const (D) macro
- c. When a member function is called, _____ is automatically passed as an implicit argument that is a pointer to the invoking object.
- (A) void (B) derived
(C) base (D) this
- d. _____ is the process by which one object can acquire the properties of another object.
- (A) Inheritance (B) Integration
(C) Polymorphism (D) Mapping
- e. Placing the qualifier _____ before a function's return type in the function definition "advises" the compiler to generate a copy of the function's body code in place to avoid a function call.
- (A) macro (B) new
(C) inline (D) void
- f. A _____ is a member function with the same name as its class but preceded by a tilde (~). It is called when an object is destroyed and takes no arguments and has no return value.
- (A) cleaner (B) template
(C) constructor (D) destructor

Code: AC55/AT55/AC105/AT105

Subject: OBJECT ORIENTED PROGRAMMING WITH C++

- g. A private member can be accessed outside the class by
 (A) friend class (B) main() function
 (C) derived class (D) any other function
- h. A _____ function is a member function that is declared within a base class and redefined by a derived class. This feature implements the "one interface, multiple methods" philosophy that underlies polymorphism.
 (A) static (B) friend
 (C) virtual (D) pointer
- i. Exception handling is designed to process errors, which occur when _____.
 (A) program compiles (B) program executes
 (C) program is typed (D) None of these
- j. Which of the following function call is the correct way to call the function with declaration: void fn(int a);
 (A) void fn(10); (B) fn(int x);
 (C) fn(10); (D) fn();

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

- Q.2** a. Explain the following features of object oriented programming: (8)
 (i) Encapsulation
 (ii) Polymorphism
 (iii) Inheritance
 (iv) Templates
- b. Explain how structures and classes are related to each other. (5)
- c. What should be the data types of the variables to store the following? (3)
 (i) middle initial in the name
 (ii) number of students in a class
 (iii) height of a person in centimeters
- Q.3** a. Explain selection statements and iterative statements used in C++. (5)
- b. Write a C++ program to illustrate one-dimensional array "Days" of size 12. Initialize each element of the array based on the number of days in each month. In the main() function, take input as month number (1: January to 12: December) and display the number of days in that month. (5)
- c. Define pointers. Write C++ statements for the following:
 (i) define an integer variable 'v'
 (ii) define a pointer 'p' that can point to an integer
 (iii) initialize 'p' to point to 'v'
 (iv) assign value 10 to 'v' (2+4)

Code: AC55/AT55/AC105/AT105**Subject: OBJECT ORIENTED PROGRAMMING WITH C++**

- Q.4** a. Define Recursion. Explain its working. (4)
- b. Give an example to illustrate function overloading. (4)
- c. Explain scope variable, reference variable, inline function and pointers to functions. (8)
- Q.5** a. Explain the working of dynamic memory management using new() and delete() operators in C++. (4)
- b. Explain the following types of constructors: (9)
- (i) constructors without parameters
 - (ii) constructors with parameters
 - (iii) copy constructors
- Write a class definition showing all these three types of constructors.
- c. Explain class scope and the method of accessing class members. (3)
- Q.6** a. Write any four restrictions in operator overloading. (4)
- b. Write a C++ program to overload increment operators. (6)
- c. Explain operator overloading as member functions and non-member function of a class. (6)
- Q.7** a. Explain various types of inheritance. (6)
- b. Define virtual function. Write a C++ program for illustration. (2+4)
- c. Compare overloading and overriding of member functions. Give their applications. (4)
- Q.8** a. Write a C++ program for overloading a function template. (6)
- b. Explain the working of namespace and give its syntax. (4)
- c. When can the exception handling be used? Explain the concept of rethrowing an exception. (6)
- Q.9** a. Mention any four format flags of ios class. (4)
- b. Write a C++ program to illustrate write() and read() file operations. (6)
- c. Explain Standard Template Library (STL). Mention the features of various components in STL. (6)